

# **Computer Simulations of Crew Redirection and Interior Access Vehicle for Aircraft Emergency Evacuation**

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The feasibility of implementing a new vehicle concept, called the Interior Access Vehicle (IAV), has been studied in recent years by the Federal Aviation Administration (FAA) Aircraft Rescue & Fire Fighting (ARFF) Research Program. The primary function of the IAV would be to restore lost emergency evacuation capability for airplanes that have an inoperative exit escape path (e.g., a deflated escape slide) following a life-threatening emergency at an airport. From the previous study of the effectiveness of IAV, the early IAV deployment can reduce total evacuation time. However, in some of the cases, results show that all exits are not fully utilized for evacuation flow even after the IAV deployments.

To enhance effectiveness of evacuation flow, the crew redirection algorithm is implemented with IAV deployment situation. Since the IAV deployed in a timely manner, after the IAV deployment, the crew redirection algorithm is applied. Two basic principles of the crew redirection are also implemented, redirecting the passengers in the section, and redirecting the passengers at the intersection. Monte Carlo simulation of multiple evacuation scenarios with timed IAV deployment delays were conducted for two different types of dual-aisle transport airplane.